

HOLY BASIL

Ocimum tenuiflorum L.

Family

Lamiaceae (or Labiatae), a family of flowering plants commonly known as the mint, deadnettle or sage family.

Parts Used

Leaf

Description

Holy basil is closely related to the sweet basil (*Ocimum basilicum*) used in kitchens around the world. It is sometimes called "hot basil" because of its peppery taste and is often added to southeast Asian dishes. A short-lived perennial, or annual, woody herb, holy basil is strongly aromatic and is recognised by its clove-like scent. It grows best in tropical and subtropical climates and is found in India across to southern China, and throughout southeast Asia where it is widely cultivated. It can grow at a fast rate, up to one metre high, and is erect, well branched and slightly hairy.^{1,2}



Traditional and Empirical Use

Holy basil is considered unique amongst medicinal herbs for its wide variety of actions and ability to treat and prevent a range of diverse conditions. It is regarded in the Hindu religion as the holiest of all plants and within Ayurveda it is known as the “queen of herbs”, that regulates the three doshas, and serves as an “elixir of life” that promotes longevity. It is revered as being without equal for both its medicinal and spiritual properties. Every part of the plant, including the surrounding soil, is venerated and considered sacred. Many Hindu households have holy basil plants growing in special places in their home, typically in an ornate earthen pot in a courtyard where evening and morning prayers are held. Regular consumption of holy basil has been shown to assist in the detoxification from environmental chemicals, and holy basil plants have also been shown to detoxify the environment and reduce air pollution. This has led to hundreds of thousands of holy basil plants being planted around the Taj Mahal in Agra, India, to help protect the iconic marble building from environmental pollution damage. Holy basil is also used extensively in several other ancient systems of medicine including Greek, Roman, Siddha and Unani, where it is valued for its broad spectrum of pharmacological activity, therapeutic actions and wide margin of safety. Regular, ongoing, daily consumption of holy basil is recommended to prevent disease, assist in adaptation to the stresses of daily life and to promote general health, wellbeing and longevity.^{3,4}

One of Australia’s pioneers in integrative and holistic medicine, Professor Marc Cohen, wrote in the *Journal of Ayurveda and Integrative Medicine* about holy basil and the mounting scientific evidence demonstrating its many psychological and physiological benefits. “Ayurveda’s use of medicinal and culinary herbs draws upon India’s incredible biodiversity with a variety that is unsurpassed by any medical system; yet, of all the herbs used, none has a status comparable to tulsi or holy basil,” he said. Cultivation of holy basil has both spiritual and practical significance that connects the grower to the creative powers of nature, while offering solutions for food security, rural poverty, hunger, environmental degradation and climate change. The use of holy basil in daily rituals is a testament to Ayurvedic wisdom

and provides an example of ancient knowledge providing solutions to modern social, economic and environmental problems.^{5,6}

The emerging science on holy basil, which reinforces ancient Ayurvedic wisdom, suggests that it is a tonic for the body, mind and spirit that offers solutions to many modern-day health problems. Human studies suggest it may assist in dealing with psychological and immunological stress. As a potent adaptogen it is traditionally recommended to be taken over long periods to prevent and treat diseases such as anxiety, cough, asthma, malaria, fever, diarrhoea, dysentery, arthritis, eye diseases, ear pain, indigestion, hiccups, vomiting, stomach disease, heart disease, genitourinary disorders, low back pain, skin diseases, white patches on the skin, ringworm, insect, snake and scorpion bites and worm infection. Holy basil may be also used to remove fluoride in water and therefore prevent fluorosis, a cosmetic condition endemic in at least 25 countries that affects the teeth and causes dental and skeletal decay. It is reported that 75mg of fresh leaves added to 100mL of water with a fluoride concentration of 5ppm removed nearly 95% of the fluoride in 20 minutes. The question remains: “What can’t holy basil do?”^{7,8}

Along with “queen of herbs” and “elixir of life”, holy basil is also known as tulsi, which means “beyond compare” in Sanskrit. It is also referred to as “Mother Nature of medicine” in the Hindu culture. The genus name, *Ocimum*, means “fragrant lipped,” and the species name, *tenuiflorum*, means “slender” or “small flowers.”⁹

Holy basil has become known as “liquid yoga” because, like yoga, it has a calming effect unlike caffeinated beverages, such as black and green tea and coffee, which are more like stimulating aerobic exercise. Prof. Cohen says holy basil can be considered adaptogenic through nurturing and nourishing the body, mind and spirit while fostering a sense of relaxation and wellbeing. “Like yoga, [holy basil] has a calming effect that leads to clarity of thought, along with a more relaxed and calm disposition. The cognitive and memory-enhancing properties of [holy basil] therefore differ from those of caffeine-containing beverages such as coffee and tea, which heightens arousal and may cause physical and mental agitation.

Furthermore, [holy basil] does not produce the same physical dependence as caffeine and can be safely consumed on a regular basis without the fear of withdrawal effects," he says.¹⁰

Constituents

Essential oils (eugenol, methyl eugenol), flavonoids (ursolic acid, oleanolic acid, ocimumoside A and B, rosmarinic acid, orientin, vicianin), saponins, triterpenoids, tannins, alkaloids, glycosides along with nutrients such as vitamins A and C, zinc, calcium, iron and chlorophyll.¹¹

Actions

Adaptogen, relaxing nervine, antidepressant, anxiolytic, neuroprotective, antioxidant, immune modulator, analgesic, chemopreventive, anticancer, anti-inflammatory, antimicrobial, expectorant, cardioprotective, hypolipidaemic, hepatoprotective, aromatic digestive.

Pharmacological Activity

Despite a wide variety of reported uses the clinical uses of holy basil are mainly based on traditional use and supported by preclinical research. Currently there are very few published human trials that document the clinical benefits of holy basil other than some of the more recent trials included below. Experimental research (test tube and animal) has not been included. According to Prof. Cohen "many of the physiological benefits of [holy basil] can be attributed to its ability to assist with the body's internal housekeeping and protection of the body from toxin-induced damage."^{12,13}

Adaptogen, relaxing nervine, antidepressant and anxiolytic activity

Professor Cohen eloquently captures holy basil's effect on mental stress: "In addition to physical, toxic and infective stress, modern living is associated with heightened levels of psychological stress caused by the many demands and fast pace of modern life. This stress compounds the toxic effects of chemical pollutants and the constant fear of pervasive toxic chemicals can itself lead to even further stress and anxiety that may be just as toxic as the chemicals causing it. While the reality of daily chemical exposure cannot be denied,

regular consumption of [holy basil] not only helps protect and detoxify the body's cells and organs, it can also help reduce toxic stress by relaxing and calming the mind and offering many psychological benefits including anti-depressant activity and positive effects on memory and cognitive function."¹⁴

A randomised, double-blind, placebo-controlled study involving 150 people found that holy basil significantly improved general stress scores as well as symptoms such as forgetfulness, frequent feeling of exhaustion, and sexual and sleep problems of recent origin. Seventy-one participants received 1200mg of holy basil, and 79 participants received placebo, for six weeks.¹⁵

In a two-month, hospital based, clinical study the researchers concluded that holy basil may be useful in the treatment of generalised anxiety disorder in humans and may be a promising anxiolytic agent. In the study 35 patients with anxiety were given 500mg of holy basil twice daily after meals. The final observations were that holy basil positively affected general anxiety levels as well as the stress and depression that accompany anxiety.¹⁶

Neuroprotective activity

Holy basil is a cerebral stimulant and is recommended for people with mental fog. The book Adaptogens says "it can be combined with other cerebral stimulants such as rosemary (*Rosmarinus officinalis*), bacopa (*Bacopa monnieri*), and ginkgo (*Ginkgo biloba*) to help people with menopausal cloudy thinking, poor memory, attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD), and to speed up recovery from head trauma."¹⁷

Holy basil (300mg capsules of ethanolic leaf extracts) was shown to have a positive effect on cognitive health, including better reaction times and minimised error rates, in humans taking it for as little as 30 days.¹⁸

Insulin resistance and type 2 diabetes activity

In human clinical trials holy basil has been shown to decrease glucose levels, improve blood pressure and lipid profiles and reduce many diabetic symptoms in patients with type 2 diabetes. Some examples are shown below.¹⁹

The results of a randomised, parallel group, open label pilot study clearly indicate the beneficial effects of holy basil on various biochemical parameters in young (17 to 30 years) overweight/obese people. The study showed that young people taking holy basil had significant improvements in lipid profiles and insulin levels. Thirty overweight/obese people were divided into two groups A and B. In group A, 16 people received one 250mg capsule of holy basil extract twice daily on an empty stomach for eight weeks and in group B 14 people received no intervention. Statistically significant improvements were observed in the values of serum triglycerides, low density lipoprotein, high density lipoprotein, very low density lipoprotein, body mass index, plasma insulin and insulin resistance in the holy basil group.²⁰

A one-month study of 27 patients with type 2 diabetes showed a significant lowering of blood glucose and a significant reduction in total cholesterol, low-density-lipoprotein cholesterol, very-low-density-lipoprotein cholesterol and triglycerides.²¹

In a randomised, placebo-controlled, crossover single blind trial, taking 2.5 grams of holy basil leaf powder daily for four weeks reduced total cholesterol levels in patients with type 2 diabetes. The results also indicated a significant decrease in fasting and blood glucose levels after meals during treatment with holy basil leaves compared to placebo.²²

Cardiovascular activity

The antioxidant properties of holy basil, including strengthening the body's internal antioxidants and suppression of oxidative stress, are suggested to contribute to the potential prophylactic and therapeutic uses in ischaemic heart disease. Holy basil has been observed to have lipid-lowering effects in a small human trial. It combines well with the cooler arjuna (*Terminalia arjuna*), when being used as a heart tonic, along with hawthorn (*Crataegus monogyna*).²³

Immune modulating activity

Holy basil is believed to increase immunity when taken on an empty stomach. In a double-blind, randomised, controlled trial 24 healthy

volunteers consumed 300mg capsules of holy basil leaves (70% ethanolic extract) or placebo on empty stomachs every day for four weeks, followed by a three-week washout period before crossover to the next intervention. The holy basil group had significantly increased levels of interferon-gamma, the cytokine interleukin 4, and percentages of T-helper cells and natural killer cells, showing holy basil's immunomodulatory effects in humans.²⁴

Antimicrobial activity

While no human trials have been published, there is experimental evidence that holy basil may help in the treatment of various human bacterial infections including urinary tract infections, skin and wound infections, typhoid fever, cholera, tuberculosis, gonorrhoea, acne, herpes simplex, leishmaniasis, various pneumonias and fungal infections, as well as mosquito-borne diseases such as dengue, malaria and filariasis.²⁵

Holy basil's broad-spectrum activity, which includes activity against *Streptococcus mutans* the bacteria that causes cavities, suggests that it can be used as a herbal mouth wash for treating bad breath, gum disease and mouth ulcers. In 20 patients with a high risk of tooth decay holy basil ethanolic extract mouthwash was more effective at reducing *S. mutans* than a mouthwash using sodium fluoride in 20 patients with high risk of tooth decay.²⁶

Holy basil mouthwash was equally as effective in reducing plaque and gingivitis as the antiseptic antibacterial agent chlorhexidine in a study performed on volunteer medical students. Thirty-six students were instructed to rinse their mouth for 30 days with 10mL of the holy basil mouthwash twice daily, once post breakfast and the other post lunch for 60 seconds, and not to rinse with water afterwards. The same number of students were given the same instructions for the chlorhexidine and placebo groups. The results demonstrated a significant reduction in gingival bleeding and plaque indices in both groups over a period of 15 and 30 days as compared to the placebo group. Those using the holy basil mouthwash did not experience the same negative effects associated with chlorhexidine.²⁷

Indications

- Fatigue, stress and related conditions, mood disorders (anxiety and mild depression), generalised anxiety disorder (GAD), poor memory and cognition, Alzheimer's disease
- Cardiovascular disease, high blood pressure, stroke
- Viral infections, fungal infections, skin infections, respiratory tract infections such as colds and influenza, herpes simplex virus, acne, allergic rhinitis, asthma, tooth decay, gingivitis
- High blood sugar, type 2 diabetes, metabolic syndrome, insulin resistance
- Peptic ulcers, indigestion
- Pain, headache, arthritis
- Hepatic disease, fatty liver disease
- Cancer prevention, adjunct to radiotherapy, heavy metal toxicity
- Issues and physical demands faced by modern air travellers such as infection, fatigue, thrombosis, dealing with anxiety, low oxygen in the body tissues (hypoxia), radiation, industrial chemicals and poor sleep.

Energetics

Warming, drying, pungent, sweet.

Use in Pregnancy

High doses of holy basil are best avoided in pregnancy. It has been used traditionally throughout pregnancy however there is preclinical evidence to suggest that high doses may have antifertility and abortifacient effects. Further research in humans is necessary to confirm this as experimental evidence cannot be extrapolated to human use.²⁸

Contraindications and Cautions

Holy basil has been used for countless generations, in different cultures and systems of medicine, without any specific safety concerns. Patients should discontinue holy basil at least two weeks before elective surgical procedures due to potential antiplatelet and hypotensive

effects, which might cause excessive bleeding and interfere with blood pressure control if used perioperatively.²⁹

Drug Interactions

While these interactions have not been reported, and they may not be clinically significant, monitor with anticoagulant/antiplatelet drugs due to theoretical additive effects, phenobarbital due to theoretical risk of increased sedation and hypoglycaemic medications due to holy basil's anti-diabetic action.^{30,31}

Administration and Dosage

Liquid Extract	1:2
Alcohol	60%
Weekly Dosage: ³²	20 to 50mL

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